

# OS-9 Newsletter

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### OS-9 NEWSLETTER Subscription Information

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### BENEFITS TO SUBSCRIPTION MEMBERS

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# Why you must upgrade your Multipak

by Marty Goodman

Over the years I have written a number of articles and answered many questions about upgrading the Radio Shack Multipak Interface for the CoCo 3. I presented in Rainbow the means of doing this upgrade for both the 26-3024 (old, big) multipak (replace the PAL chip) and the 26-3124 (smaller, newer) multipak (add a 74LS10 chip to the circuit in a way detailed both in Rainbow and on Delphi in a file in the CoCo SIG Hardware Hacking data base). However, until a few days ago, I never really fully understood myself just WHAT that upgrade was doing, and why it was being done. Because of my own incomplete understanding of what was going on, I was unable to definitively answer in the past such questions as: "My 26-3124 multipak seems to work fine with my CoCo 3. Should I REALLY bother to upgrade it?" I would tend, reader may note, to waffle on this question.

Recently I was consulting with a developer on the design of a commercial multipak like device for the CoCo. In the course of this, I finally had to REALLY understand what was going on with that upgrade. I now KNOW just why that upgrade was designed. And I now understand why EVERY user of a CoCo 3 with a Multipak Interface MUST upgrade their Multipak for CoCo 3 operation. The explanation is a bit technical, but I will try to make it as clear as I can.

The Multipak interface does a number of things. Its most obvious (tho least important) function is its ability to "select slots" by routing certain active signals to and from the CoCo only to one of its four slots. However, a more important function of the Multipak is to BUFFER the signals going to and from the CoCo, so that the the 6809's address and data lines can be adequately "fanned

out"

may plug into the slots on the multipak. Now, buffering the 16 address lines from the 6809 is very simple, because information on the address lines travels only in ONE direction: from the 6809 TO everything else. However, buffer the 8 data lines is a trifle more tricky, because sometimes (when the processor is doing a WRITE to a given address) data is going from the 6809 to other chips and devices, but at other times (when the 6809 is doing a READ of a given location) the data is going FROM a chip or card external to the 6809 TO the 6809. Thus, data can flow in either of two directions on the data bus.

If one wants to buffer the data bus, one must employ a "bi-directional buffer" that can send data in either direction. Now, no buffer made can work in both directions at once, so we need a means of telling the bi-directional data buffer which direction data is going at any given time. This is done by the R/W line from the 6809, which is high during read operations, during write operations. Well then, why not just hook the read/write line to the data buffer chip (a 74LS245) in the Multipak and be done with matters? It's not so simple. You see, SOME of the time, the 6809 will want to read from or write to certain chips on the mother board, such as the 6821 and keyboard PIA chips, or to the GIME chip ports. Now, no problems arise when the 6809 is trying to WRITE to one of these locations. BUT, if the 6809 is trying to READ FROM one of these on board chips, a potential problem arises if a Multipak is in use. You see, during a READ operation, the data buffer, if enabled, will necessarily put data on the 6809 data bus. But, if that read is meant to be of a

chip on the mother board, the data buffer in the Multipak Interface would be putting garbage on the data line that would be conflicting with the data the chip on the CoCo mother board is trying to put on the bus! Therefore, added circuitry is necessary (found within the PAL of the old Mpak and within the big custom chip in the newer Mpak) that checks to see if the 6809 is addressing a port that is already assigned to chips on the CoCo mother board. IF the address on the address bus is one of the mother board chip ports, THEN this extra circuitry DISABLES the data buffer, making that data buffer chip act as if it WAS NOT THERE ("tristating the data buffer").

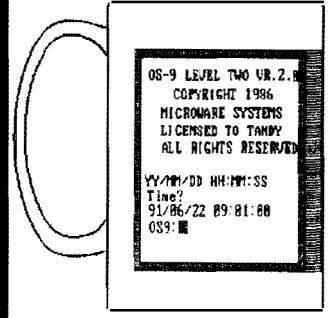
The problem is that in the days of the CoCo 1 and 2, when both Multipaks were designed, there was vacant address space for I/O devices in the range of \$FF60 thru \$FFBF. So the Mpak circuitry allowed for valid reads and writes in that range, but locked out the rest of the I/O address space except for that covered by the SCS line (\$FF40 thru \$FF5F). However, when the CoCo 3 was designed, the GIME chip was assigned ports in the range of \$FF80 thru \$FFBF. This range was NOT protected from data bus conflict in either Multipak. Thus, if you have not upgraded your Multipak, if your software attempts to READ the contents of GIME chip registers, it MIGHT get back garbage, for the information from the GIME chip registers will be CONFLICTING on the data bus with random garbage that will be on the data buffer chip! Note that WRITES to the GIME chip ports are UNAFFECTED. The upgrade for both Mpaks involves narrowing down the valid external I/O address space to exclude the address space now used by (or reserved for) the GIME chip.

But, you may ask... how come

many older Mpak will dramatically cause the system to CRASH, when present, where the newer, smaller Mpak SEEMS to work fine with the CoCo 3 without any upgrading? Well, the answer is that the OLDEST of Mpaks had a slot select port addressed to BOTH \$FF7F AND to \$FF9F. The "ghosting" of the slot select port to \$FF9F plays holy havoc with any program talking to the GIME chip, for the GIME chip uses address \$FF9F, and data is written to that location during initialization of the CoCo3! Thus, owners of the older Mpaks found that, at power up, their Multipak "on its own" deslected the disk controller! Nasty! Later model big Mpaks and all of the smaller model newer Mpaks had their slot select port completely decoded to \$FF7F, so they would not "crash the machine" or "fail to see the disk controller" at power up. MOST of the time one is WRITING TO GIME chip registers, it is not nearly as common, nor quite as critical, that one should be READING the contents of those registers. Since the conflict I described above occurs ONLY during READ operations, it is not suprising that many folks have used their unupgraded Mpaks with their CoCo 3's and not observed problems. But the POTENTIAL for problems remains, and I advise all CoCo 3 owners to UPGRADE your Mpaks, if you have not done so already.

- Marty:Delphi -

VERY FEW LEFT!



**NY CoCoFest Cups \$3**

CONTACT DONALD ZIMMERMAN at 871-6535

"HURRY"...LESS THAN 15 CUPS LEFT....

## "NEW" OS-9 Users Group

The old OS9 Users Group based in Florida is now defunct and a new world wide OS9 Users Group is in the making. Here is the latest information being posted on CoCo/OS9 Fido Bulletin Boards and Delphi and Compuserv.

The purposes of the OS-9 Users Group are as follows:

- 1) To support OS-9 and it's successor (if desirable) OS-9000
- 2) To support a large library of public domain, freeware and share-ware software.
- 3) To help distribute any information in form of newsletter, magazine pagerental or by word of mouth.
- 4) To keep updated database of software available in the library.
- 5) To keep updated databases of OS-9 retailers, manufacturers, distributors and any other companies affiliated with the above.
- 6) To keep updated databases of BBS, clubs and users group.
- 7) To keep updated databases of companies in need of programmers experienced in the OS-9 environment.
- 8) To keep updated databases of programmers needing extra income.
- 9) To publish a newsletter on a scheduled time in magazine pages selected by the Users Group.

Duties of the OS-9 Users Group are as follows:

- 1) To obtain donations from OS-9 supporting firms.
- 2) To edit and publish newsletter.
- 3) To distribute lists of any data available in our databases as stated in parts 3 to 8 in return for donations.
- 4) To help programmers find temporary and full time employment with use of database as stated in part 7.
- 5) To help companies find the right programmer as stated in part 8.

Comments: The above duties are only general descriptions and are

not directly related to any positions.

Positions for the "new" World Wide OS9 USERS GROUP required:

- A) President : ?
- B) Co-ordinators (2 to 3 max) :
  - 1) DONALD VAILLANCOURT
  - 2) ?
  - 3) ?
- C) Vice-President (1 per designated area) :
 

CANADA: ?

U.S.: ?

EUROPE: ?

AUSTRALIA: ?
- D) Treasurer : ?
- E) Secretary : ?
- F) Editors (1 to 2 max) :
- G) Head Librarian : ?
- H) Librarians (1 per designated area) :
 

CANADA: KEVIN BACKS

U.S.: ?

EUROPE: ?

AUSTRALIA: ?
- I) Other staff required ("slaves") :
- J) Members ...

Anyone willing to fill any of the above positions or have any suggestions may contact the above members or write to:

OS-9 Users Group Co-ordinator  
1378 Credit Woodlands Court  
Mississauga, Ontario, Canada  
L5C 3J5  
(416)273-7390

This OS-9 Users Group is in no way affiliated with the now defunct OS-9 UsersGroup.

Until the OS-9 users group is ready for full operation, it will carry the name of "THE OS-9 USERS GROUP" and will not legally be filed as a NON-PROFIT organization until further notice.

- Donald Vaillancourt:Delphi -

## PhantomGraph "patch"

for Star Gemini 10x & 15x Printers

by Kevin Darling

To modify the /Dx/CMD5, dmpibm.drv printer driver for use on Star Gemini 10x 15x printers, revise the 1/6 line space mode to 4/144 or 2/72. Use a backup copy of Phantomgraph DO NOT USE THE ORIGINAL DISK.

### Using OS9 level 2 and MODPATCH:

A) Boot OS9 Insert your system disk that contains MODPATCH utility into drive number 0 (or substitute D0 in the instructions below for another device).

```
OS9:chd /d0;chx /d0/cmds;load modpatch build
```

B) Insert the Development system disk that contains the SAVE command. Note for those of you who don't have the Development disk, that SAVE9.BAS is available in the OS9 forum utilities section on Delphi. Note that SAVE9.BAS is designed to be downloaded to a regular RS Dos Disk and includes a method for transferring it over to an OS9 disk.

```
OS9:chd /d0;chx /d0/cmds;load save
```

C) Insert your Phantomgraph disk into drive 0

```
OS9:load /d0/cmds/dmpibm.drv
OS9:build gempie.p
?** patch for most line/bar/pie graphs
?l dmpibm.drv
?** change module name
?c 000d 64 67 * d -> g
?c 000e 6d 65 * m -> e
?c 000f 70 6d * p -> m
?c 0010 69 69 * i -> i
?c 0011 62 6e * b -> n
?c 0012 6d 69 * m -> i
?**
?c 02d5 32 33 ** 1/6 -> n/144 line space mode
?c 02da 0d 04 ** and set
?v
?<ENTER>
OS9:modpatch gempie.p
OS9:save /d0/cmds/gempie.p gempie.p
```

OR build this patch file for better proportional pie charts, although it fits pretty tight on your 11 inch paper, so line-up right to the perforation line is very important.

```
OS9:load /dx/cmds/dmpibm.drv
OS9:build gempie.p
?** patch for better
?** uses full 11 inches align paper carefully
```

```
?l dmpibm.drv
?** change module name
?c 000d 64 67 * d -> g
?c 000e 6d 65 * m -> e
?c 000f 70 6d * p -> m
?c 0010 69 70 * i -> p
?c 0011 62 69 * b -> i
?c 0012 6d 65 * m -> e
?**
?c 02aa 0d 00 ** no <CR> before plotting
?** change graph line gap
?c 02d5 32 33 ** 1/6 -> n/144 line space mode
?c 02da 0d 05 ** and set to 5/144 line space
?v
?<ENTER>
OS9:modpatch gempie.p
OS9:save /d0/cmds/gempie.p gempie.p
```

D) Now startup Phantomgraph in a graphics screen (or just type startup to execute PG normally). Produce a chart that contains patterns see pg 28 and the DATA panel for more info. It is the patterns that will distinguish differing elements on your printed graph, colors have no effect on the printed graph. Complete then DRAW your graph, then select UTILITIES, click on PRINT, select your gemini/gempie driver.

- Kevin Darling/Delphi -

## Basic09 Patch PROFILE

to run under OS-9 Level 2

by Bruce Ondersma

I was having problems under OS9 Level 2 getting OS9 Profile to work. No wonder, because it needs a patch to work with OS9 Level 2. The following is from Radio Shack Computer Customer Service # 7879 (817-390-3861) in Ft. Worth Texas.

The following procedure will patch OS-9 Profile (26-3247) to run under OS-9 Level 2 (26-3031).

1. With OS-9 Level 2, FORMAT a blank disk and make a backup of your master copy of Profile.
2. Take the OS-9 System Master disk out of drive 0 and put in the BOOT/CONFIG/BASIC09 disk.
3. At the OS-9 prompt type:  
chx /d0/cmds  
then press <ENTER>.
4. Start BASIC09 by typing:  
basic09  
and then press <ENTER>.
5. At the B: prompt type:  
e fixprofile  
and then press <ENTER>.

6. At the E: prompt, put a space before typing each line and press <ENTER> after each line below.

```
DIM path,newval:INTEGER
DIM profilecrc(3),mgtcrc(3):BYTE
newval:=$2041
DATA $8A,$E5,$C0,$6B,$75,$A9
FOR count:=1 TO 3
  READ profilecrc(count)
  READ mgtcrc(count)
NEXT count
OPEN #path,"/d0/cmds/profile":UPDATE
SEEK #path,$11EA
PUT #path,newval
SEEK #path,$64E4
PUT #path,profilecrc
CLOSE #path
OPEN #path,"/d0/cmds/mgt":UPDATE
SEEK #path,$0506
PUT #path,newval
SEEK #path,$1D55
PUT #path,mgtcrc
CLOSE #path
Type q and press <ENTER>
```

7. Take out the OS-9 disk and put the backup disk of OS-9 Profile in drive 0.

8. At the B: prompt type:

```
run
and press <ENTER>
```

9. When the B: prompt returns, Profile has been patched and may now be used under OS-9 Level 2.

That's all there is to it and so far I have had no problems running Profile with Level 2 using windows, including 80 column screens.

- Bruce E. Ondersma (BEO);Delphi -

## Improve OS9Boot file by Zack Sessions

The following files, besides OS9Boot, are required for OS9 to boot:

```
CMDS          d ewrewr
CMDS/Shell    --e-rewr
CMDS/GrfDrv   --e-rewr
```

For people using hard disks the above restrictions are too strong. SHELL will be acquired from /H0/CMDS and GRFDRV will be acquired from /D0/CMDS if you start your system in a window type screen. If you start your system in a VDGINT screen and then create your windows after, GRFDRV will be loaded at that point from /H0/CMDS. In this case the 'only' file necessary on the boot disk is OS9Boot. [trimmed]

Initially some stuff gets executed which is irrelevant

to this topic. Then, later, the module Init is executed. Well, it isn't actually executed, it contains some constants which describe a few things. These are:

- 1) Startup Module
- 2) Boot Device
- 3) Startup Window
- 4) Name of boot module

In a stock OS9 Level 2 disk from Tandy, the initial values for these are:

- 1) CC3Go
- 2) /D0
- 3) /Term
- 4) Boot

What this means is that when the module Boot is executing (I think), the data directory is set for /d0 and the execution directory is set for /d0/cmds. Then CC3Go is forked in the /term device. Now on to CC3Go.

CC3Go has a few constants as well. They are:

- 1) Startup Banner Message
- 2) Data Directory
- 3) Execution Directory
- 4) Startup Program
- 5) "autostartup" Program
- 6) Startup Procedure Filename

The initial values in the stock CC3Go module from Tandy are:

- 1) OS9 Level 2 V02.00.01, etc.
- 2) /H0
- 3) /H0/Cmds
- 4) Shell
- 5) Autoex
- 6) STARTUP

CC3Go is the key startup module for OS9 Level 2 on a Color Computer 3. What it does is this: (this isn't everything, I left a few things out, but this is everything relevant to this discussion)

1) Writes out Banner message to startup window. By default this is /Term, and by default /Term is a VDG type window. If you patch Init to startup in a window, say /W or /W1, and the window device type is a window device, not a VDG window, then CC3Go performs an implied load of GrfDrv. Since your device is still /d0, then grfdrv MUST be in /d0/cmds with the execution attribute bit set. If not, "OS9 BOOT FAILED". If you use a hard drive and you want to boot up in a window and you want to get GrfDrv from the hard drive, you must also patch Init's Startup Device to either the hard drive or (more commonly) to /dd (if /dd equates to your hard drive, of course).

2) Attempt to do a "Chx Cmds" command. The Cmds is the later part of the Startup Execution Directory string. If an error occurs, it is ignored. (I'm not really sure why this is even done because it is my impression that by this time the execution directory is already set as /d0/cmds)

3) Attempt to do a "Chd /H0" command. The /H0 is the string Data Directory, number 2 above. If an error occurs, skip step 4, go to step 5.

4) Attempt to do a "Chx /H0/Cmds" command. The /H0/Cmds is the string Execution Directory, number 3 above. If an error occurs, it is ignored.

5) Attempt to fork a Shell feeding it STARTUP as the parameter. The command Shell is the Startup Program, number 4 above, and STARTUP is the Startup Procedure Filename. If this fails, then "OS9 BOOT FAILED". This is the first time Shell is needed. This implies that if you have a device called /h0, and there is a directory called h0/cmds, then Shell must be there. If you don't then shell must be in /d0/cmds. Of course, in either location, it must have it's execution attribute bit set on. On success of this fork, wait for the child process to complete.

6) Attempt to fork a child process with AutoEx as the primary module. AutoEx is the "autostartup" program, number 5 above. If this succeeds a wait is performed, and CC3Go does not continue until that program, whatever it may be, issues an F\$Exit call. If this fork fails, the error is ignored. The most common use for this "feature" is to automatically start GShell at boot time. The Multi-View disk has an image called autoex in its CMDS directory which is nothing more than a copy of the program multistart with it's name set as autoex. If you don't believe me, try running an Ident on the two files.

7) Attempt to Chain an immortal Shell in the current window device, normally /Term. Here, Shell is the same Startup Program, number 4 above. To force an immortal shell to be chained, it is passed by a parameter string, "i=/1". If this fails, "OS9 BOOT FAILED".

Customizing your boot procedure involves patching Init and CC3Go's constants to be what you want. In my case, I have patched Init to come up in window device /W and with a boot device of /dd. I have also patched CC3Go in the following manner:

1) Changed the Banner Message to something like "Property of Zack Sessions", etc.

2) Added code to set the monitor type to RGB, set the mouse to hi-res/right port, and turn off the floppy motors.

Doing these required disassembling CC3Go, making the changes to the source, and recompiling with the Level 1 assembler, ASM. If you want more specific instructions on this, let me know.

- Zack Sessions/Delphi -

## Mt. Rainier CoCo Club

meets

2nd Tuesday of each Month at 7p.m.  
Parkland/Spanaway Library on 138th

## New OS-9 Bulletin Board

by Chris Johnson

As of August 1st, the OS9 Tacoma BBS was on line, providing a Color Computer-based bulletin board system (BBS) for OS-9 and CoCo users in the Tacoma area.

System operator (SYSOP) is Chris Johnson, a member of the Port Orchard CoCo/OS9 Club, whose micro-computer experience goes back to 1978. Also involved as a sysop is John Schliep, the president of the Mt. Rainier Color Computer Club. The BBS software is RiBBS v2.0, written by Ron Bihler, and was set up using the "RiBBS to Go" package provided by Warren Hrach, who runs the Ocean Beach BBS in San Diego, CA.

OS9 Tacoma is running on a 512K CoCo-3. The system has a multipak, Disto SC-II for the floppy drives and Burke & Burke interface for the hard drives. Two 20 Megabyte hard drives are on the system. The modem is a Performance Plus Baud Bandit MNP 5+. Approximately 10 megs of archived downloadable share freeware files are on the system already.

On-line games are available including RiBBS Trek, a good StarTrek game, Galawar, a very sophisticated trade and conflict type game, and several others with new games being added.

E-Mail and discussion areas are provided to leave messages, including messages areas exclusively dedicated to the Port Orchard and Mt. Rainier CoCo/OS9 Clubs. The system supports both ANSI color graphics codes and OS-9 color graphics codes, or standard TTY mode.

Tests are being conducted now in order to establish OS9 Tacoma as a part of the FidoNET system with access to thousands of BBS's around the world.

OS9 Tacoma is available 24 hours a day. Telephone number is (206) 566-8857. Modem baud rates of 300, 1200 or 2400. Protocol is 8 bits, no parity and 1 stop bit.

-Chris Johnson: Mt. Rainier CoCo Club -

## 68K on the TC-9

Frank Hogg explains. . . .

The TC9 can have either 512K or 1 megabyte of RAM. With 1 Megabyte the DAT board is required. In stand alone operation the TC9 acts exactly like a Color Computer 3 with either 512K or 1 Megabyte RAM. When the TC9 is connected to the K-Bus and Tiger this is enhanced.

The Tiger card is a K-Bus CPU card with a 10Mhz 68000 CPU and 2 EPROMS that can hold up to 128K. No RAM or other IO is on the Tiger. The Tiger is derived from the K-CPU which is a 68000 CPU card for the K-

Bus. The only difference between the two are the EPROMS. Thus the Tiger with can be used on the K-Bus as a 68000 CPU card. The Tiger's main purpose is to act as a co-processor for the TC9.

#### How?

To the Tiger the TC9 looks like a memory card. The TC9 appears on the K-Bus as a 512K or 1 Meg RAM card. None of the other components on the TC9 are directly available to the Tiger unless the TC9 acts as a co-processor for the Tiger. In a similar fashion the TC9 is unaware of the Tiger directly. None of the components that might be on the K-Bus are directly available to the TC9. With one exception, discussed later.

#### Why?

The K-Bus and the CoCo 3 existed before the TC9 was designed. The challenge was to marry the two very different architectures so they could work together. A tough job, but we did it.

#### How we did it.

The TC9 can do one thing related to the K-Bus. It can cause a 68000 interrupt. The Tiger can do anything in the TC9s memory. Therefore we have created a simple but elegant way for the two to communicate. We call it the mailbox.

The mailbox is a small area of the TC9 memory that both the TC9 and Tiger have reserved for communication. If the TC9 wants the Tiger to do something all that is necessary is for the TC9 to put (POKE) what it wants the Tiger to then generate the 68000 interrupt. The Tiger responds to the interrupt by looking in the mailbox for what it is supposed to do.

The simplest command is 'Yo Tiger, you there?'. For programming purposes it is necessary for the TC9 to know if a Tiger exists in the Tomcat system. A program (application or system call) can have running modes with and without a Tiger with this call.

First the program asks if the

Tiger exists. The Tiger responds by putting that information in the mailbox. The scenario is this: 1) TC9 puts the 'Yo Tiger, you there?' code in the mailbox.

2) TC9 'calls the Tiger' (generates the 68000 interrupt)

3) TC9 looks in the mailbox for the answer. (If the Tiger is there then it puts a 'Yes' answer in the mailbox.) If the answer is yes then the TC9 can use the Tiger. If the answer is blank then the TC9 knows the Tiger is not installed

4) The next basic Tiger call is: 'Jump to this address and execute the code there.' The TC9 puts some 68000 program code in TC9 memory somewhere. The TC9 puts the execution address of this code in the mailbox along with the command to 'Jump to this address and execute the code there.'

5) The Tiger looks in the mailbox for the command, sees that it is supposed to execute code at address X and does so. When the Tiger is done it puts information in the mailbox informing the TC9 what it did.

By the way, While the Tiger is 'doing its thing' the TC9 can continue 'its thing'. That's right, both CPUs can operate 'at the same time'. This capability will make for some very interesting programming. For example: The TC9 can be running a game while the Tiger can be doing the graphics.

The TC9 is addressable on the K-Bus. This means that the TC9 takes up any one Meg of the 16 Meg address space on the K-Bus. A jumper (JP11) on the TC9-CPU card is set to the 1 Meg address that you want the TC9 to occupy. This allows the TC9 to co-exist in a fully expanded K-Bus system. This is necessary because this type of system can have a large variety of cards, memory, IO etc. A side effect of this design feature is the ability of multiple TC9s in the system.

#### What about OSK for the Tiger/TC9?

We have OSK for the Tiger when it is used in conjunction with other K-Bus cards. A port would have to be

done for the Tiger to use the TC9 as an intelligent co-processor. Work has not started on this and although we want to do it we have not scheduled it at this time.

#### How much faster does the Tiger make the TC9?

This is real tough to answer. Remember that the Tiger only manipulates the TC9 memory so only memory intensive operations would be affected. However on a CoCo3 TC9 memory intensive operations are the rule. An example is the simple act of moving memory from one area to another. If the move is within the 6809s 64K address space then the 6809 can do the move pretty efficiently. However if the move is outside of the 64K limit then things slow down a lot! The 6809 has to use the DAT that is built into the GIMI to switch in different banks, 8K at a time, to the 64K address space, then move the memory in small chunks, then use the DAT again etc etc. The Tiger looks at the entire 1 Megabyte as one piece. (actually it looks at the entire 16 Megabytes of the K-Bus as one piece) and can move memory from one place to another with just a load and store. Actually the 68000 has built in 'move' instructions that make memory moves even faster and Oh I forgot the 68000 also does it in 16 bit chunks. Also the 68000 is just plain faster than the 6809. What this all comes down to is that on paper the Tiger can do things up to 8 times faster than the TC9. BUT, because it can't do everything and not all of them 8 times faster, we have settled on a conservative 2 to 3 times faster claim. Until we are able to make some comprehensive tests that is.

The fastest method is for the 68000 to do it's thing while the 6809 does nothing. When both are running the 6809 holds the bus about 66% of the time preventing the Tiger from 'doing it's thing'. However remember that during that 34% the Tiger is running at 16 bits so it is more like 68%. If the Tiger is running 'its thing' in non-TC9 memory then it runs

even faster, at full bus speed. So while it runs in its ROM code or other memory on the K-Bus it would run at full tilt. (It runs at about 8Mhz while in the TC9 memory space due to the GMM)

#### In development:

We are working on a cross assembler that would put a 6809 header on the code that would automatically call the Tiger. This would make it easier to write 68000 code under OS9 Level II. We will be looking at doing the same thing for RSDOS.

Frank Hogg  
Frank Hogg Laboratory, Inc  
204 Windemere Rd  
Syracuse NY 13205  
315-469-7364

PS Looking down the long road...

Much of OS9 Level II could be transferred to the Tiger. Evaluating those areas of LII we see that the entire windowing system 'could' be transferred to the Tiger. In our ultimate system this code could be in the Tigers EPROMS along with whatever else we think of in the meantime. This would have benefits besides speed. It would free up system RAM in LII. System RAM is only 64K, all of OS9Boot resides there along with other stuff. You've probably experienced the case where you run out of memory with many K free. This is usually a case where you have run out of system RAM. Each running shell takes up (I believe) 2K. By moving a lot of LII to the Tiger the system RAM is effectively increased with the byproduct of being able to run more processes. Having the additional speed of the Tiger will also make running more processes possible. In my experience the main reason for going to OSK is speed and being able to use bigger chunks of memory. (copy #1000K for example) The TC9/Tiger will take care of half of than without going to OSK.

Think of the possibilities.

## TomCat-XT

FHL and Hazelwood are happy to announce our intention to provide a single slot K-Bus to PC XT adaptor. We call it the TC-XT. We will be providing software support for VGA and Ethernet PC cards.

The TC-XT, unlike our 8 slot PC Bus extension will be designed to plug into the K-Bus and support one PC XT card. Several TC-XT adaptors can be used in a Tomcat system.

Although the TC-XT can be used with many PC cards we cannot promise software support for anything other than the VGA and Ethernet cards at this time.

The TC-XT is expected to be available in the fourth quarter of 1991 with a projected price of under \$100.

This future addition to the Tomcat will open doors previously closed. We have had many requests for support for VGA and Ethernet as well as other PC cards such as Fax modems and special purpose cards. The TC-XT will open the door into this world!

Normally we don't announce a product like this before we have the design finalized. We are doing this because we would like some feedback before the design is cast in stone.

I would like to solicit your comments on the TC-XT. Here is your chance to have an effect on the design of this exciting new product for the Tomcat.

- Frank Hogg, FHL/Delphi -

Port O'CoCo Club  
Meets 3rd Mondays  
at  
The "Stock Market", Hwy.160  
Port Orchard, WA

Seattle 68xxxMug  
Meets 1st Tuesdays

at  
Gugenheim Hall, U of W

## CLASSIFIEDS

OS-9 Lev-2 (New, Complete)	\$20
Desk Mate (Lev-1, New)	\$ 5
Deluxe RS-232 Pak w cables	\$35
PBJ CC-Bus (6-slot Multipak)	\$50
Modified Modem/RS-232 Pak	\$20
Call 734-5806	

FD-502 Case & Power Supply	\$20
FD-501 Case & Power Supply	\$20
Call 647-7620	

#### Discontinued Close Out Items

Color Compur-3's	\$69
CM-8 Analog RGB Color Monitor	\$159
FD-502 Disk Drive 0 System	\$55
OS-9 Disk Software	\$ 5
CoCo RomPaks	\$5-14

Local RADIO SHACK Stores

Longview/Kelso  
CoCo Club  
Monthly meetings

#### CONTACT

Steve Hammond 577-7316

## "How To" Video



Installing "IRQ" Hack  
Installing 512K Ram Kit  
Installing B&B Hard Drive  
Upgrade Speech Sound Pak  
Installing a 2nd Floppy Drive

\$10.00

plus \$2.00 shipping & handling

1-734-5806



AR	Archive/Unarchive file utility
JERRYBENCH	10 x 10 matrix multiply benchmark
SIEVE	Self-tuning benchmark
SAVAGE	Beta mark
PLOT	Plot language processor
FLER	Miscellaneous Scratch Pad and DataBase
ADRLABEL	Samite Access - Mail Makers program in Basic60
SPEEDISK	Flowdy disk compression repack utility

GROUP1=30	Min-Art graphic files for Tandy's Home Publisher
GROUPTEXT	Documentation files for Group1=20 clip-art files
VEFPRT	VEP graphic format print-out program
VIEW	VEP MacE CMS 840 format viewer utility with window
MANDEL	MacEe's Brook graphics generator (BaseC09)
ACROCBM	4 VEP files re-formatting CoCo 3 into IBM type case
VENCIF2	GE format viewer with color "filtering"
VENCVF2	Displays flicker-vep files as well as normal VEP
AFMCR	BaseC09 utility to create AIF files for Multitree
SUPERKLE	Open routine. MacEe control art graphic colors

CLCK1	Generates clock time display
PKA EDIT	Creates icon graphics for Multivue
PRTPRM	File management: Archive utility. Pak/unPak into/from
ICONS	Prints GEMMATE pictures to Gemini AX 10 printer
PXLLOAD	Library of Multi-view AIF and icon files.
OTHEL	Loads and displays GEF format graphic files
PIX	Packed basic90 single-line game
FLTBRO	VEF pix viewer, Atari ST-VEF converter and does file
MGEPIX	VEF pix from Flight Simulator II
GEF09	View MGE format pics like VEF files
PGCHARTS	View GEF format pictures
VEFNUR	VEF pix of charts
WATERFALL	A VEF pix of nubes
SATSHUTT	VEF pix of a waterfall
SHOOTCKT	VEF pix of NASA Space Shuttle
RAILS	VEF pix of pits running around circuit board
MAXPIX	VEF pix of Universal Solis
OLIVER	VEF pix of CoCo Max screen
GOOPY	MGE pix of Computer's Oliver viewing computer
	MGE pix of Walt Disney's Goody

WIND	Basic09 program that prompts for window parameters
FUNDOW	Basic09 windows demonstration program
CLOCK	Basic09 script file to initialize a clock/date
HURDLE	Basic09 window overlay demonstration/utility program
WINDOWS	7 window script files for use with above programs.

CC3DPR.VH	Allows disk I/O under different formats (PC, Atari)
CC3G0.SSYS	Required when using Speech Systems Real time clock
CC3G1.SSYS	Required to access Speech Systems Real time clock
FSTGRF	Kevin Darling's High speed patch for Level-II
HULTRACIA	Creates larger buffer area or faster 85-232 access
TS2DT	Patch to enable TS2dit to display 80 column Level-II
ACIA.PAT	Another patch by Peter Lyall to enlarge buffer area
DYNAPAT	Patches Dynacore to permit 160 column display
800TS9COL	Permit blue/white 80 column text screen on boot-up.
GRFDV2	Patches Kevin Darlings patched GRFDRV for 25 lines.
GSHELL234A	Patches Gshell4 version 1.24a for faster operation
GSHELL	This is the GSHella upgrade patches package.
GSHELLPA	Enhancement: patches for GSHella vers. 1.24 or 1.34a
GRFPATCH	Patches GRFDRV for 25, 27 or 29 line screens
SSPAK	OS9 Level Two Drivers/descriptor for Speech Sound Pak includes instructions modify the PAK for Level II.
GFX2PAT	Patch to correct misplacement of the "Fill" name in the enhanced gfx2 (GFX2.ARI) file on Utility Disk 3
KRNL	Patch to kernel to give it OSK (OS9-88000) compatible filenames "A" "Z" "a" "z" "0" "9" "-" "." "_" "\$"
DEDPLUS	Patch for DED to auto-reconcile the Bit Allocation map sect.
WINDIF	Patch to prevent Windint menu-bar "roll-over"
W2PAT	4 lPatch files: Windint, CC3G0- CC3G1 err, CPortIpe

CC2	Lev-2 C Compiler double pass execution module
ALIB	RMA (Relocatable Macro Assembler) Library files
CTUTORIAL	14 Chapter text with example source codes for learning "C".
DEVPACUPDATE	15 Instructional text on how to apply updates to the "C" Library from the GSD Development System disk
CC2RAM	C Compiler execution module for compiling ".c" files in RAM

CUBT1 Kreider "C" Library  
CUBA1 Kreider "C" Library

CGFX1	"C" Graphics Library
STDLIB2.C	Kreider's standard "C" Library files
PASCALDEFS	Pascal Library files for Level Two
AUSTRALIANSCULPTOR	Sculptor source codes for creating/demonstrating Sculptor database system
DEVSYS	User friendly interface for C, Pascal, ASM & RMA Assemblers
CESTART	Direct replacement for Microware's restart Library File
MINILEV1	Ability to precheck C source files for construct/syntax errors
SIMMON	OS-9 Level-1 Debugger (better than Microware's 9SDBG)
BLST	Runs Pascal90 programs with optimization and breaks long lines

PLAY	Plays digitized Mac audio files
MUSOUSE	Lets you write and edit sheet music on a graphics screen, and play on any MIDI-equipped synthesizer
DEMO	On-Screen demonstration of Lems (Similar to MIDI-MusE)

beam.mac	ave.mac	back.mac	beam.mac	harp.mac
dom.mac	dave.mac	door.mac	gag.mac	unscott.mac
power.mac	flash.mac	landing.pla	liffloft.pla	
garn.mac				

ACIAmain	Filter to change control strings from a terminal into corresponding ansi strings.
ACIAmapOut	Appearance from the ACIA Driver gets control of Init, Read and Write and passes them thru ACIA to the physical device.
DOWNLOAD	Comes input from specified device to Silicon
UPLOAD	Copies data to specified device.
BBS	Basic64 Bulletin Board Modules
BIGT	Start Terminal with xmodem, ascii protocols
TYPE C	Groups characters to/from device
XTERM	Dumb terminal with xmodem protocol
KERMIT	Download/Upload protocol between terminal systems
USER	BBS Sysop utility to view user files.
TELESTAR 3	Excellent smart terminal program (40k+ for level-II)
XCMM9	Another excellent full function terminal program.
AUTOBAUDTSMON	Detects incoming baud rate
SYSPROM	Level-II full function terminal program with xmodem

WZPRO : Basic09 - GS-9 Level 2 Terminal program

RTERM	: Telecommunications package	Requires RS-232PAK
BTTERM	: Telecommunications package	Requires RS-232PAK.
OSTERM206	: Telecommunications package	Version 2.06 Requires RS-232 PAK.
NEWCOM9	: Telecommunications package	Bells and Whistles added to orig

```

ARCHIVE      : Creates destination directory and copies files to new dir.
MODULE      : Collection of enhanced standard OS9 utilities: msoepack, mmodule,
             indup, informat, mmakdir, mmrmfr, pmcopy, rep, split, unuse,
             verin, trimmode
RSDOS       : File transfer utility from Radio shack Dos format to OS9
SQR         : Super Directory to enhance/replace standard DIR utility
AMPUTATE    : Forces the term call of the cache device driver returning
             memory to the system and delete all files on the device.
PALETTE     : Change screen/window palette (color) on the fly
AR          : OS9 Archiving utility (version 1.3)
DLS         : Directory utility
PCDOS       : File transfer utility from PC format to OS9
WCONFIG     : Window configuration utility
BCOLOR      : Change background color: Backgr <color>
FCOLOR      : Change foreground color: Fcolor <color>
BORDER      : Change border color: Border <color>
EATF        : Deletes line feeds from downloaded files
PRINTHELP  : Prints SIS/helpinfo to screen/prntr
QTP         : Disk zap utility (self prompting) Text or Graphics screen
RESET       : Keyboard "cold start"
CALL        : Calls commands repeatedly. Command list with lines on stdin.
IPATCH      : Creates a new file from an Originalfile and a Patchfile
SORTDIR    : Sorts directory entries in ASCII order
WMODE       : Returns status of current window
CLEAR       : Deletes all files from directory
LABEL       : Renames the Disk Name/Label (self prompting)
STIMP       : Strip or Add Character (line feed, carriage returns)
ZAP         : Disk zap utility. Must be in 80 column mode
LSH         : Unix type Directory Utility
SYSINFO     : Complete status report of current window/terminal including
             current palette colors.
CONVERT     : Converts decimal to hexadecimal equivalent numbers/vise versa
MAPATCH     : Created patch file for use with IPATCH
TREE        : Directory utility. List hierarchical listing of all directories.

```

PAN File Archive utility  
 UTIL0 Merged utilities file  
 PROC Enhanced "PROCS" utility showing I/O of each process  
 PMAP Memory map of each process location  
 PATHS I/O path of each process  
 DDIR Device Directory  
 DIR Directory  
 DIRM Dir -e equivalent of DIR  
 MMAP Memory map of used and unused 5K blocks  
 SMAP Memory of pages in RAM  
 DMEM Memory dump by location instead of file name  
 COPY Updated PD version of standard Copy utility  
 DIR Updated PD version of standard Dir utility  
 PURGE Deletes files from a directory  
 DASM Disassembler for Level I ASM and Level II RMA files  
 DISKOPT Graphics DCHECK Utility (Self Prompting)  
 CTS Coder/Decoder for transferring binary or ascii files on systems that do not support error checking protocols  
 GIVES Gives a graphic display of disk sector allocation map  
 NEWGAT Replaces the VERIFY command. Doesn't require new filename  
 DPOKE "Poke" hex code to the offset address of a file  
 DUNZIP Duplicates any file on the same disk

#### Utility Public Domain Disk 2:

MORSE Reads data from a/c in and converts to Morse Code audio tones  
 DIR Unix "LS" type Super Directory utility  
 SHELL21 Q-shell's Group's expanded "shell" module for OS-9  
 SCRIPT Script files for use with Shell  
 CCON Converts files and directory names to proper case (Upper/Lower)  
 CRC Turns off the CRC check routine in OS-9  
 HDKIT Peter Lyall's Hard Drive Backup/Restore Utility  
 BOOTSPLOT Generates merged modules into individual files  
 C2C Executes routine for microware C Compiler on OS-9  
 C Single column (non-spaghetized) directory utility  
 DEVMODE DeviceMODE utility to change disk drive parameters  
 DMODE DeviceMODE utility to change disk drive parameters  
 DIRCOPY Copies files from one directory to another  
 PRINT Formatted I/O listing to printer device  
 PRINTER Level-II version of microware's PRINTER  
 PRINTHELP Utility to print help message file to screen/printer  
 SEPARATE Separates merged modules into individual files  
 DIR Enhanced Directory Utility with Sort and Search options.  
 DISKCAT Directory cataloging utility with graphics overlays.  
 DISASM Disassembler of machine code files (ASM and RMA)  
 DED Disk ZAP utility. Must be in 80 column mode.  
 ULDIR Converts Directory names and files to proper Upper/Lower Case (Directories=UPPERCASE, Files=Lowercase)  
 COMPARE CMP utility that compares 2 files (one in memory, other in ram)  
 RSFORMAT "OSKINI" standard 35 track RS-Jos format  
 RRENAME Renames a file on a standard 35 track RS-Jos format  
 REBACK BasicOS enhancements for Peter Lyall's HDKIT Utility  
 MAIL Multituser login MAIL (scan/read/post) program/utility  
 DIR:TL Graphics enhanced Directory utility with overlay windows  
 SBACK Re-write of REBACK for use with a mouse and Multitue.

#### Utility Public Domain Disk 3:

DOALL Utility that supplies a directory listing in pipe format, designed to take advantage of shell wildcard features  
 EASYEDIT Change device descriptors in your OS-9 Bootfile  
 GFX2 Updated GFX2 for OS-9 Level-II by Kevin Darling and Kent Meyers  
 INDEX Contains three programs that create, maintain and read an index of disk files  
 KUTL To extract/modify/install the OS-9 Kernel  
 SDUMP Screen dump in background task  
 SMOUSE Permits standard PC serial mouse usage from an RS-232 port  
 SUMMARY Utility to summarize spreadsheet data  
 SWISE Utility to produce side wise printouts from dyncalc  
 SPEDISK Disk repack/compression utility by Brian White, version 2 is  
 VDG Generates VDG type screen for Level-I applications  
 SCOPY Single drive copy util. for copying to dissimilar formats  
 PARTGEN Hard Drive Partitioning utility for Burke & Burke systems  
 PS This is a "Point & Shoot" Menuing utility/application  
 KFORMAT Disk Format utility that is self prompting.  
 SMENV: GShell graphics menuing environment/application  
 MENU Text windows menu utility/application

#### Utility Public Domain Disk 4:

DATES Calculates the day of the year given the year, month, date  
 QUALDOS Puts an RS-DOS sector on an OS-9 formatted disk  
 MDUMP Dumps memory to printer or screen  
 UNZIP2 MS-DOS de-archiving utility (PKUNZIP) for use on OS-9

#### BOB VAN DER POEL UTILITIES:

INTEAVE Checks disk drive to find optimum interleave.  
 DSCTIME Causes system clock to be reset by DISTO hardware clock.  
 DIR A more complete version of Super LS by Congo Computer  
 FFX Lasting utility that eliminates TABS and CR/LF  
 PHONE Phone dialer and "auto login" to BBS's  
 BLIST Display a BASIC99 program that has been listed to a file with pagination and properly formats the break in of too long lines  
 DIR A TREE Directory  
 VEFSAVE Save an existing graphics screen to disk  
 VEFPRINT Print a VEF file to an Epson printer with a 640 dot mode.  
 VEFPRINT 23 VEFPRINT for printers that print 23/216 inch line spacing  
 VEFPRINT 25 VEFPRINT for printers that print 25/216 inch line spacing  
 MAKEFILE Assembles VEFSAVE and VEFPRINT listed above.  
 CCHDISK Replacement for DISTO's hard drive adapter driver.

#### Word Processor Public Domain Disk:

UEMACS "Micro E-Macs" Unix Text Editor.  
 ED16 Simple full screen text editor (version 16) for Level-II.  
 WR0FF Text formatter using Word Star DOT formatting commands  
 SLED Text processor with on screen help windows  
 ED20 Graphics screen editor for Multitue environment  
 ED91 Graphics screen editor - latest version



## CONGRATULATIONS

BERNIE & BARBARA BESHESSE for their AdLabel.B09 program that was published in the September RAINBOW Magazine. Of course this means that we will have to remove Bernie's program from our Public Domain Library since it is now the legal property of THE RAINBOW and is therefore Copyrighted.

## WELCOME

## TO OUR NEW SUBSCRIBERS:

TOM BROOKS, Bremerton  
 ALAN JOHNSON, Tacoma  
 RANDALL KIRSCHENMANN, Tacoma  
 ALAN ROCKWOOD, Richland



# Club Activities



## Seattle 68xxxMUG

At the August 6th meeting, Scott Honaker presented a lesson on the 5 different data types of variables available with Basic09 compared to only 2 (REAL & STRING) data types available with Disk Extended Basic (Spaghetti Basic). And how a 6th data type can be defined for use in Basic09, such as field arrays for use in a database.

One of the members shared his completed modem conversion to an RS-232 pak. The workmanship was excellent and it was rewarding to see a club hardware project being completed by one of the members. He also showed a hardware project of his own. A hi/low resolution joystick/printer port switch/interface all in one. This created a lot of excitement and a promise that schematic diagrams would be available at the September meeting.

The September agenda will include a follow-up session with Scott on creating a simple database with basic09 using variable types learned at the August meeting. AND the Hi/Low Rez Joystick Interface switch hardware project.

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## Longview-Kelso

At the August 8 meeting we hooked up a 128k CoCo to a 512k CoCo through the bitbanger port. We installed the bitbang driver and new 12 descriptor along with a modified printer cable. We also had some demos of the new Seabattle and Minefield games from Color Systems. Plus we hooked up a second SCSI hard disk and tested the new SCSI47AR that has a new SCSI driver for OS-9 and Disto super controller II and the 4in1 board.

## Port O'CoCo

The Port O'CoCo had an excellent turn-out with more than 15 in attendance. Don Zimmerman started the meeting with the traditional "pass the cup" \$1 contribution and a soft sales pitch on the remaining "NW CoCo Fest" cups.

Chris Johnson announced his OS9 Tacoma BBS is on line at (206) 577-8857, 24 hours/day at 300-2400 baud, and 8X1 protocol. Chris also made an excellent presentation on the entire concept of telecommunications, from the compatibility and quality of the serial I/O signals available from the CoCo, to an explanation of what a modem is to the services available on Bulletin Boards and telecommunications services such as Delphi, Compuserv and Fido-NET.

Rodger Alexander drove down from Bellingham to display and explain their "products" coming out of the OS9 Users Group (Forum). Rodger rambled some to make up for Chris's very succinct presentation, but he still came out OK with Tom Brooks and Mark King subscribing to the OS-9 Newsletter, and the Port O'CoCo Club purchasing a complete set of the Bellingham OS9 Users Group Public Domain Library (17 Disk) and a copy of the OS-9 Level Two Tutorial.

Mark King presented his second session on programing in C. This was an excellent presentation with Mark prompting those in attendance to use their knowledge of C gained from the previous session to fill in the blanks setting up variable declarations and initializations. A review of the variable types and how they were used in "printf" statements and the "\n" syntax to create a "new line"

## Mt. Rainier

Rodger Alexander from the Bellingham OS9 Users Group brought his CoCo in a mini PC tower and gave a short presentation on how thier club has evolved into a forum for promoting OS9. Rodger brought sample copies of the Newsletter and showed portions of thier "How To" Video Tape. Randall Kirschenmann and Alan Johnson signed up for a one year subscription to the Newsletter.

Chris Johnson announced his new RiBBS Bulletin Board is now up and running and soon will feature Fido Networking. The phone number is 566-8857. The board is available 24 hours/day and operates at 300, 1200, 2400 and faster baud rates. There is no charge to use the service although those using the Fido Net feature will be billed for the cost of the long distance charge. The board will feature message forums and E-Mail plus download and upload facilities using Kermit, Xmodem and Ymodem protocols.

There was not enough time for Alan Johnson to make his presentation on the VIP Library data base, so it will be re-scheduled for the September meeting.

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## Bellingham OS9 Users

No scheduled meeting for August other than the installaton of 512K memory into Ray Flick's CoCo, a buying trip by Craig DuBois and Rodger where they picked up two FD-502 Drives for \$59 and Rodger's "field trips" to the Mt. Rainier and the Port O'CoCo Club meetings.

## Washington State BBS List

FAR POINT BBS - Seattle  
(206) 285-8335

COLUMBIA HTS. BBS - Longview/Kelso  
(206) 425-5804

DATA WAREHOUSE BBS - Spokane  
(509) 325-6787

BARBEQUED RIBBS - Bellingham  
(206) 676-5787 Conference #5

OS-9 TACOMA - Tacoma  
(206) 577-8857

Bellingham OS-9 Users Group  
presents . . .



Written by  
Scott Honaker & Rodger Alexander

Mail \$2 + \$1 shipping fee to:  
3404 Illinois Lane, Bellingham, WA 98226

### **OS-9 Newsletter**

3404 Illinois Lane  
Bellingham, WA 98226